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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Norman C. Fawley

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EXAMINER

BUTLER, PATRICK NEAL

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/695,252	Applicant(s) FAWLEY, NORMAN C.	
	Examiner Patrick Butler	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 11-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Clavin (US Patent No. 4,132,104).

With respect to Claim 1, Clavin teaches applying a material to a pipe (see col. 4, lines 43-59), therefore forming a composite reinforced pipe. The pipe is heated prior bending and the pipe is bent (see col. 1, line 57 through col. 2, line 5; fig. 1).

With respect to Claim 2, Clavin teaches heating to a temperature that the coating is not destroyed and is softened and deformed (below a heat distortion temperature) (see col. 4, line 43 through col. 5, line 2; particularly col. 4, line 65 through col. 5, line 2).

With respect to Claim 3, Clavin teaches bending at a location then continuing bending at another location (bent incrementally at a plurality of longitudinally displaced locations) (see col. 4, lines 20-42).

With respect to Claim 4, Clavin teaches twelve-inch diameter pipes (see col. 2, lines 50-55) and bending 1° per arc foot (see col. 5, lines 3-5). Thus, a total bend of 1° in an arc foot with a twelve-inch diameter pipe (1° of longitudinal length equal to a diameter of the CRP).

With respect to Claim 7, the pipe is preheated to apply the coating (preheating the pipe) before heating to bend (preheating before heating) (see col. 4, lines 43-65).

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Rhodes, Jr. et al. (US Patent No. 5,234,333).

With respect to Claim 1, Rhodes teaches a bending a hollow plastic rod containing resinous materials and reinforcing fibers (a method of bending Composite Reinforced Pipe (CRP)) (see abstract; col. 2, lines 39-59; and col. 8, lines 41-44) by heating and bending a section of the rod (placing a heater proximate to a longitudinal location along the pipe where the pipe is to be bent; heating the pipe; bending the pipe at the longitudinal location) (see col. 2, line 55 through col. 3, line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clavin (US Patent No. 4,132,104) as applied to Claims 3 and 4 above, and further in view of Lewis (European Patent Application 1 086 760 A2).

With respect to Claims 5 and 6, Clavin teaches making a CRP as previously described with 1° bends achieved in the arc distance equal to the pipe's diameter.

Clavin does not explicitly teach bending with individual bends having $\frac{1}{4}$ the length of the pipe's diameter.

Lewis teaches achieving cumulative bends with spaced $\frac{1}{4}^\circ$ bends (see col. 9, paragraphs [0029] and col. 10, paragraph [0031]).

In view of Clavin, the spaced $\frac{1}{4}^\circ$ bends would be $\frac{1}{4}$ of the 1° arc length (longitudinally displaced locations are separated by a distance equal to approximately $\frac{1}{4}$ of a diameter of the pipe).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Lewis's bend increments with Clavin's pipe bending because Lewis teaches that $\frac{1}{4}^\circ$ bends can incrementally achieve the larger overall arc desired to be obtained (see Lewis, col. 9, paragraph [0029] and col. 10, paragraph [0031]).

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clavin (US Patent No. 4,132,104) as applied to Claim 1 above, and further in view of Miller et al. (US Patent No. 4,255,378).

With respect to Claim 8, Clavin teaches making a CRP as previously described.

Clavin does not explicitly teach capping the ends of the pipe.

Miller et al. teach capping the ends of a pipe to be bent (see col. 5, lines 22-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller's caps with Clavin's bending in order to prevent the wall from buckling up upon formation of the curve (see col. 5, lines 22-29).

With respect to Claim 10, Miller's heating of the tube creates hot air in the tube (introducing hot air into the CRP) (see col. 5, lines 22-29).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clavin (US Patent No. 4,132,104) as applied to Claim 1 above, and further in view of Rossheim et al. (US Patent No. 2,480,774).

With respect to Claim 9, Clavin teaches making a CRP as previously described and bending with resistance heaters.

Clavin does not explicitly teach using induction heaters.

Rossheim teaches induction heaters and resistance heaters are used to bend pipe.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Rossheim's induction heaters with Clavin's process of heating pipes being bent because both resistance and induction heaters are capable of satisfactorily functioning in the service of heating a pipe to be bent (see Rossheim, col. 7, lines 41-48).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes, Jr. et al. (US Patent No. 5,234,333) as applied to Claim 1 above, and further in view of Fawley (US Patent No. 4,559,974).

With respect to Claim 17, Rhodes teaches using longitudinal reinforcing fibers (a resin with longitudinal reinforcement fibers positioned along the pipe) (see col. 2, lines 39-59) but does not expressly teach using circumferential reinforcement fibers.

Fawley teaches winding fibers around a pipe (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Fawley's process of winding fibers around a pipe in making Rhodes's pipe in order to provide a pipe that is able to arrest propagating ductile fractures (see col. 3, lines 7-11).

With respect to Claim 18, Rhodes as combined with Fawley does not expressly teach that the number of longitudinal fibers is within the claimed range (e.g. greater than a number of circumferential fibers).

However, in this regard, Fawley teaches minimizing additional labor and material costs (see col. 3, lines 4-11). As such, Fawley recognizes that the amount of wrapped fibers is a result-effective variable. Since the number of circumferential fibers is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum number of circumferential fibers applied in the process of Rhodes in view of Fawley through routine experimentation based upon minimizing additional labor and material costs.

Response to Arguments

Applicant's arguments filed 13 February 2008 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC § 102(b) rejections. Applicant's arguments appear to be on the grounds that:

- 1) Applying plastic to a pipe in Clavin does not provide a composite reinforced pipe as clarified by "Introduction to Composite Materials" since no reinforcement is imbedded with a matrix attached to the pipe.

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2) Clavin only teaches heating the pipe coating. Thus, the inner portions of the pipe are not directly heated. Moreover, the coating is not part of the pipe.

3) The heat distortion temperature is determined by more than a mere softening of the material as clarified by "Deflection Temperature Testing of Plastics."

4) Clavin teaches heating the coating rather than the underlying pipe. Thus, the limitation of heating the pipe is not taught.

5) Clavin's teaching of bending the pipe 1° /arc foot does not disclose longitudinally spacing the bends, and Lewis's teaching of spacing $\frac{1}{2}^\circ$ bends do not provide the required $\frac{1}{4}^\circ$ bends.

6) Miller's retaining of air is not intended to heat the coating to prevent tearing. Thus, the purpose of the claimed step is not met.

7) The incorporation of Rossheim's induction heater would not be a simple incorporation into Clavin's strongback. Thus, the challenge of incorporating would frustrate the purpose of Clavin.

The Applicant's arguments are addressed as follows:

1) It does not appear that "Introduction to Composite Materials" provides more than examples via the language of "typical" and "generally" in page 1, first full paragraph, line 1 and second full paragraph, line 1. Thus, "Introduction to Composite Materials" is not definitive of the term composite reinforced pipe.

1) Moreover, as recited in the Office Action mailed 13 November 2007:

Clavin's coated pipe is a composite reinforced pipe because the resultant pipe is:

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- both an original pipe and a coating (composite), since composite is something that is made up of distinct parts or compound as defined by Mish (*Webster's Ninth New Collegiate Dictionary*, page 270, ¹**composite** adj **1** : made up of distinct parts; ²composite n **1** : something composite : COMPOUND),
- the coating reinforces the structure to the extent that it would tear before allowing the pipe to bend absent specialized processing as taught by Clavin (reinforced) (see col. 1, line 57 through col. 2, line 5; fig. 1), and
- results in a finished product that is a pipe (pipe) (see fig. 1).

2 and 4) As recited in the Office Action mailed 13 November 2007:

Applicant's claimed "pipe" is a composite pipe, which, by definition, would include portions, which would also be individual pipes, such as the inner pipe of Clavin and the coating of Clavin. Thus, the examiner interprets the claimed "pipe" to be the composite reinforced pipe, which would include the coating.

2 and 4) As recited in the Office Action mailed 13 November 2007:

Moreover, the heating of the coating in Clavin would necessarily heat the pipe at least by conduction through their interface.

3) As indicated in "Deflection Temperature Testing of Plastics," the heat distortion temperature occurs when sufficient bending occurs (see page 1, caption of figure). Thus, the heat distortion temperature occurs within the softening of the material. As disclosed above, Clavin teaches heating to a temperature that the coating

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is not destroyed and is softened and deformed (see col. 4, line 43 through col. 5, line 2; particularly col. 4, line 65 through col. 5, line 2). Thus, the softening of Clavin that occurs below the heat distortion temperature would read on the claim.

5) In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As combined, Clavin teaches making a CRP as previously described with 1° bends achieved in the arc distance equal to the pipe's diameter.

Clavin does not explicitly teach bending with individual bends having $\frac{1}{4}$ the length of the pipe's diameter.

Lewis teaches achieving cumulative bends with spaced $\frac{1}{4}^\circ$ bends (see col. 9, paragraphs [0029] and col. 10, paragraph [0031]).

In view of Clavin, the spaced $\frac{1}{4}^\circ$ bends would be $\frac{1}{4}$ of the 1° arc length (longitudinally displaced locations are separated by a distance equal to approximately $\frac{1}{4}$ of a diameter of the pipe).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Lewis's bend increments with Clavin's pipe bending because Lewis teaches that $\frac{1}{4}^\circ$ bends can incrementally achieve the larger overall arc desired to be obtained (see Lewis, col. 9, paragraph [0029] and col. 10, paragraph [0031]).

6) In response to applicant's argument that Miller's purpose is not to prevent heat loss, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

6) Moreover, as recited in the Office Action mailed 13 November 2007:

Clavin is relied upon for teaching avoiding tearing and heating the pipe instead of Miller. Moreover, Miller is relied upon because it teaches the benefit of plugging to prevent the wall from buckling up upon formation of the curve (see col. 5, lines 22-29), which is being done in Clavin.

7) As recited in the Office Action mailed 13 November 2007:

In response to applicant's argument that Rossheim's apparatus would be frustrating to combine with Clavin, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. B./

Examiner, Art Unit 1791

/Monica A Huson/

Primary Examiner, Art Unit 1791